

**Biological Anthropology**  
**Clemson Thinks<sup>2</sup>**  
ANTH/BIO 3510  
Spring 2014

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**COURSE OVERVIEW:**

This course provides an introduction to biological anthropology, including: genetics and evolutionary theory, biology and behavior of non-human primates, human evolution, and modern human variation. We will be focusing on using strategies to focus and improve critical thinking skills using topics related to biological anthropology.

**CLEMSON THINKS<sup>2</sup>:**

This course is part of the Clemson Thinks<sup>2</sup> (CT2) critical thinking experiment, a program aimed at improving student critical thinking skills. Memorizing facts and being able to repeat definitions is not a sufficient skill set to address the complex problems facing our world today. You need to develop the ability to critically evaluate how knowledge is constructed and the assumptions underlying that knowledge. We will engage in specific learning strategies that are outlined in the course schedule that will help you to deliberately think about your own thinking process and the assumptions underlying the field of biological anthropology.

**STUDENT LEARNING OUTCOMES:**

- Explore evolutionary theory to evaluate changes in human populations from cellular through species levels.
- Analyze primate taxonomies and infer relationships among extinct and extant non-human primates.
- Interpret hominin fossil record in order to assess the evolution of our species over the past 6 million years.
- Extrapolate biological anthropology methodologies to understand modern human variation.
- Synthesize alternate findings into clear and well-reasoned arguments.
- Effectively communicate complex ideas.

**REQUIRED TEXTS:**

Essentials of Physical Anthropology: Discovering Our Origins. 2012. CS Larsen. W.W. Norton & Company.

Required Supplemental Readings:

PDF's of additional articles posted on Blackboard.

**ARTIFACTS:**

There are a variety of assignments in this course that you can utilize as artifacts to demonstrate your refinement of critical thinking skills over the term (e.g., essays and in-class exercises). The products you create may provide a good option to include in your ePortfolio to demonstrate critical thinking skills.

### **COURSE REQUIREMENTS AND GRADING:**

|                                       |   |          |
|---------------------------------------|---|----------|
| 11 Online quizzes (25 points each)    | = | 275 pts. |
| 5 Essays (25 points each)             | = | 125 pts. |
| 6 In class exercises (15 points each) | = | 90 pts.  |
| Class participation                   | = | 30 pts.  |
| Final Exam                            | = | 80 pts.  |
| <hr/> Total:                          | = | 600 pts. |

100-90% = A; 89-80% = B; 79-70% = C; 69-60% = D; <60% = F

Online quizzes will be available on Blackboard. Quizzes must be completed before class on the first day of the week they are assigned. Quizzes are open book and open note, but should be completed individually. You may take the quizzes as many times as you like and your final score will be entered into the gradebook. The goal of the quizzes is for you to come to class demonstrating basic comprehension of the topics discussed in the textbook.

We will engage in frequent in-class activities and discussions and it will be necessary for you to arrive having read and thought about the readings. **No makeup in-class assignments will be given**—if you are late or absent for class you will receive 0 points.

In accordance with university policy, your grades are available to you at any time. Any grade challenges must be presented **in writing with detailed justifications** within three days of receiving the grade.

### **CLASSROOM GUIDELINES:**

This is a college-level course and an attentive, responsive class will create a positive class atmosphere. Please be respectful of me and students around you. This includes: not using your laptop for anything other than taking notes, reading anything not assigned for the course, sleeping, disrupting class verbally or physically, text messaging, and rude conduct towards other class members or the professor. Please arrive on time and stay for the entire class period. Please turn all cell phones off.

If you find yourself falling behind in school for personal or academic reasons, please see me rather than simply stop attending class. If I know there is a problem, I can direct you to the proper resources. Students who wish to drop this class must follow appropriate university procedures to do so. Please do not simply stop attending.

This course presents the commonly-held anthropological perspectives on topics within Anthropology, not the professor's personal opinions. Feel free to consult the textbook at any time for verification. However, please note that anthropological ideas may differ considerably from your pre-existing opinions about the world and our place in it.

### **ATTENDANCE POLICY:**

Regular attendance is necessary for academic success in this course; therefore students are expected to attend all classes and take detailed notes. Your grade requires that you not only attend class but also actively participate in discussions and activities. A student who misses too many classes may be administratively withdrawn. If you miss a lecture, you must get notes from a classmate. **Please do not ask me for notes.**

Please wait at least fifteen minutes should I to be late for class.

If class should be cancelled for any reason (e.g., inclement weather), readings/assignments/exams for BOTH the missed day(s) AND the current day will be due on the day that classes resume. Please note that classes will be cancelled only with official university announcements.

### **ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES**

Students with disabilities who need accommodations should make an appointment with Arlene Stewart, Director of Student Disability Services, to discuss specific needs within the first month of classes. Students should present a Faculty Accommodation Letter from Student Disabilities Services when they meet with instructors. Student Disability Services is located in G-20 Redfern. Please be aware that accommodations are not retroactive and new Faculty Accommodation Letters must be presented each semester.

### **ACADEMIC INTEGRITY AND PLAGIARISM:**

The Undergraduate Announcements state:

“As members of the Clemson University community, we have inherited Thomas Green Clemson’s vision of this institution as a ‘high seminary of learning.’ Fundamental to this vision is a mutual commitment to trustfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form.”

All work turned in on tests and papers must be your own. Academic dishonesty in any form is not tolerated, and violators will be punished with the maximum penalties. Any material taken word-for-word from any source must be put in quotes and the source information must be provided completely. Work from other students, the internet, or any paper-writing service may not be used under any circumstances. Plagiarism is stealing. When in doubt, provide citation information.

## SCHEDULE OUTLINE

| <b>Date</b> |                                    | <b>Topic</b>                             | <b>Due</b>     |
|-------------|------------------------------------|--|----------------|
| 9-Jan       | <b>UNIT 1: Evolutionary Theory</b> | What is Physical Anthropology / Syllabus |                |
| 14-Jan      |                                    | CAT Pretest                              |                |
| 16-Jan      |                                    | Evolutionary Theory                      | Quiz 1- Ch. 2  |
| 21-Jan      |                                    | Film                                     |                |
| 23-Jan      |                                    | TBA                                      |                |
| 28-Jan      |                                    | Genetics                                 | Quiz 2-Ch. 3   |
| 30-Jan      |                                    | Genetics                                 | In class 1     |
| 4-Feb       |                                    | Population Genetics                      | Quiz 3-Ch. 4   |
| 6-Feb       |                                    | Population Genetics                      | In class 2     |
| 11-Feb      |                                    | Modern Human Variation                   | Quiz 4-Ch.5    |
| 13-Feb      |                                    | Modern Human Variation                   | Essay 1        |
| 18-Feb      |                                    | Race                                     | Essay 2        |
| 20-Feb      |                                    | <b>UNIT 2: Primates</b>                  | Primates       |
| 25-Feb      | Primates                           |  | In class 3     |
| 27-Feb      | Primate Behavior                   |  | Quiz 6-Ch. 7   |
| 4-Mar       | Primate Behavior                   |  | In class 4     |
| 6-Mar       | Fossils                            |  | Quiz 7-Ch. 8   |
| 11-Mar      | Fossils                            |  | In class 5     |
| 13-Mar      | Primate Origins                    |  | Quiz 8-Ch. 9   |
| 18-Mar      | <i>Spring Break</i>                |  |                |
| 20-Mar      | <i>Spring Break</i>                |  |                |
| 25-Mar      | <b>UNIT 3: Human Evolution</b>     | Hominins                                 | Quiz 9-Ch. 10  |
| 27-Mar      |                                    | Bipedalism                               | Essay 4        |
| 1-Apr       |                                    | Early Homo                               | Quiz 10-Ch. 11 |
| 3-Apr       |                                    | Early Homo                               | In class 5     |
| 8-Apr       |                                    | The Rise of Modern Humans                | Quiz 11-Ch. 12 |
| 10-Apr      |                                    | AAPA - TBA                               |                |
| 15-Apr      |                                    | The Rise of Modern Humans                | In class 6     |
| 17-Apr      |                                    | Models of Modern Human Origins           |                |
| 22-Apr      |                                    | Recent Discoveries                       | Essay 5        |
| 24-Apr      |                                    | CAT                                      |                |
| 30-Apr      |                                    | <b>Final Exam 3:00-5:30 pm</b>           |                |

## **DETAILED COURSE SCHEDULE:**

### **Unit 1:**

**Evolutionary Theory: Students will review basic genetics, explore modern evolutionary theory, analyze modern human variation, and synthesize a solution to race in medicine.**

#### Week 1: Course Introduction and Introduction to Critical Thinking

Questions:

- What is anthropology and how does biological anthropology fit within the discipline.
- What is critical thinking and why is it important?

Students will:

- Complete CAT pretest

#### Week 2: Evolution: Constructing a Scientific Theory

Questions:

- How did the theory of evolution come to be?
- What was Darwin's contribution to the theory of evolution?
- What has happened since Darwin in the development of our understanding of evolution?

Students will:

- Read chapters 1 & 2 and complete online quiz
- Complete Natural Selection Concept Inventory

#### Week 3: Basic Genetics

Questions:

- What is the basic structure and function of DNA?
- What is the relationship between genotype and phenotype?
- What are the ways variation can be introduced into a population through sexual reproduction?

Students will:

- Read chapter 3 and complete online quiz
- In class exercise #1
  - Extrapolate knowledge of inheritance to explore the basis of a genetic disease in humans using *scenario analysis*.
  - Explain the molecular clock and the way genetic data can be used to reconstruct human history.
  - These strategies are provided to allow you to practice exploring a complex challenge and to extrapolate from one conceptual context to others.

#### Week 4: Population Genetics

Questions:

- What are the forces of evolution (from the Modern Synthesis) and how does each one function within and between populations?

Students will:

- Read chapter 4 and complete online quiz
- In class exercise #2

- Complete a Hardy-Weinberg problem and extrapolate the relationship to population genetics.
- Complete a creative activity illustrating the forces of evolution.
- These strategies are designed to allow you to practice exploring the complex challenge of population genetics and to extrapolate from Hardy-Weinberg problems to evolutionary dynamics.

#### Week 5: Modern Human Variation

##### Questions:

- What is the unique pattern of growth and development observed in humans?
- How can adaptation be used to explain modern human variation?

##### Students will:

- Read chapter 5 and complete online quiz
- Essay #1
  - Read contrasting cases for explaining human's unique life history traits and the origins of menopause. Include a reflection of learning process.
  - This assignment is designed to allow you to practice analyzing multi-dimensional problems and synthesizing alternative solutions to multi-dimensional challenges.

#### Week 6: Race

##### Questions:

- How has race historically been used to understand human variation?
- Is race a biologically meaningful category?

##### Students will:

- Essay #2
  - Using Medline find an example from a recent medical study that uses racial grouping to examine a disease. Identify the assumptions that the researchers use regarding the biological meaningfulness of race. Read Gravelee et al. (2001) article examining race in a medical study from Puerto Rico. Compare and contrast the two approaches in order to determine if race should be used as a variable in medical studies and diagnoses.

### **Unit 2: Primates**

**Students will examine taxonomic classification schemes and definitions of a species. Students will classify primate taxonomic categories, apply primate socioecological theory, and describe primate evolution.**

#### Week 7: Primate Taxonomy

##### Questions:

- What characteristics do all primates share?
- What are the major divisions within the primate taxonomy?

##### Students will:

- Read Chapter 6 and complete online quiz
- In class exercise #3
  - Explore differences and similarities between different primate groups using skeletal material provided.

### Week 8: Primate Behavior

#### Questions:

- What are the general behavioral patterns in the living primates?
- What kinds of societies do primates have?
- How do the specific environmental conditions influence primate behavior?

#### Students will:

- Read Chapter 7 and complete online quiz
- In class exercise #4
  - Examine results of primate studies, interpret graphs, identify assumptions
- Essay #3
  - Read Stanford article and examine the role that scientists' assumptions about male/female behavior may influence primate behavioral studies.

### Week 9: Fossils and Their Place in Time and Nature

#### Questions:

- What is a fossil and how can we tell how old it is?
- How do we reconstruct the environments that the primates lived in?

#### Students will:

- Read Chapter 8 and complete online quiz
- In class exercise #4
  - Identify the conditions under which fossilization is likely to occur.
  - Examine different dating techniques and determine when they should be used.
  - Analyze results from the study of *Ardipithecus ramidus* to determine how environments were reconstructed.

### Week 10: Primate Origins and Evolution

#### Questions:

- Why Did Primates Emerge?
- When, where, and why did different types of primates emerge?

#### Students will:

- Read Chapter 9 and complete online quiz

### **Unit 3: Human Evolution**

**Students will analyze different theories with regard to the origins of bipedalism. Students will also describe the evolution of hominins.**

### Week 11: Early Hominins

#### Questions:

- What are the major fossil species from 6-3 million years ago?
- What do these fossils tell us about the behavior and lifeways of these hominins?

#### Students will:

- Read Chapter 10 and complete online quiz

### Week 12: Bipedalism and other characteristics of hominins

#### Questions:

- What are the hominins and why do we call them our ancestors?
- How do we recognize a biped in the fossil record?

- Why did the hominins become bipedal?

Students will:

- Essay #4
  - Read one of five articles on the origins of bipedalism and present the theory in small group discussions using critical conversation protocols.

### Week 13: Early Homo

Questions:

- What are the characteristics that define the genus Homo?
- Who were the earliest members of the genus Homo?
- When did modern human biological and behavioral characteristics develop?

Students will:

- Read Chapter 11 and complete online quiz
- In class exercise #5
  - Examine the fossil evidence and synthesize understanding of the evolutionary trends from 6-0.5 million years ago.

### Week 14: The Rise of Modern Humans

Questions:

- Who were the hominins that lived between about 500,000-30,000 years ago?
- When and where do anatomically modern humans appear?
- When and how does modern human behavior appear?

Students will:

- Read Chapter 12 and complete online quiz
- In class exercise #6
  - Examine the fossil evidence and synthesize an understanding of the evolutionary trends from 500,000-30,000 years ago.

### Week 15: Models of Modern Human Origins and the Role of Recent Discoveries

Questions:

- What different models are proposed for the evolution of *Homo sapiens sapiens* from earlier forms of *Homo*?
- How do we interpret recent findings regarding modern human origins?

Students will:

- Essay #5
  - Read three brief articles discussing new and revolutionary discoveries for modern human origins and extrapolate the findings to critique models for modern human origins.
  - Complete CAT posttest